

# TOSHIBA

## STEREO RADIO CASSETTE RECORDER

# RT-S502D



### SPECIFICATIONS

|                         |                                                                                   |                    |                                                     |
|-------------------------|-----------------------------------------------------------------------------------|--------------------|-----------------------------------------------------|
| Cassette tape used:     | C-30, C-60, C-90, C-120                                                           | Speakers:          | 120 mm (dia.) dynamic x 2                           |
| Tape speed:             | 4.8 cm/sec.                                                                       | Jacks:             | [MIC] jack x 2, Impedance<br>200 ohm – 2K ohm       |
| Track system:           | Four-track two-channel<br>stereophonic                                            |                    | [AUX] jack x 2, Impedance<br>50K ohm                |
| Recording system:       | AC bias (55 kHz)                                                                  |                    | [PHONES] jack headphone                             |
| Erasing system:         | Multipolar magnet erasing                                                         | Power supply:      | AC 220V – 240V, 50 Hz<br>DC 9V (SUM-1 "D" size x 6) |
| Frequency response:     | 60 Hz to 10 kHz                                                                   | Power consumption: | 13W                                                 |
| Receiving frequency:    | FM: 88 – 108 MHz<br>LW: 145 – 270 kHz<br>MW: 525 – 1605 kHz<br>SW: 5.9 – 15.4 MHz | Dimensions:        | (W) 391 mm x (H) 281 mm x<br>(D) 127 mm             |
| Intermediate frequency: | FM: 10.7 MHz<br>LW, MW, SW: 460 kHz                                               | Weight:            | 2.9 kg                                              |
| Antenna:                | FM, SW: telescopic antenna<br>LW, MW: ferrite-core antenna                        | Power output:      | 2W x 2 10% Distortion                               |

Specifications are subject to change without notice.

TE, TU

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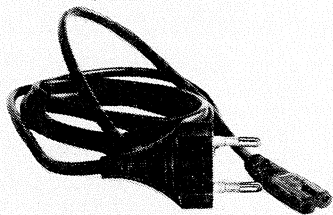
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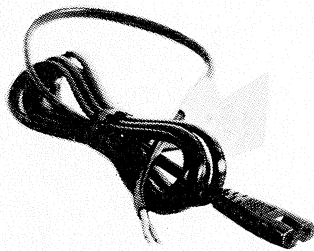
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Power Cord (TE)



Power Cord (TU)



## 1. OPERATING CONTROLS

## CONTROL FUNCTIONS

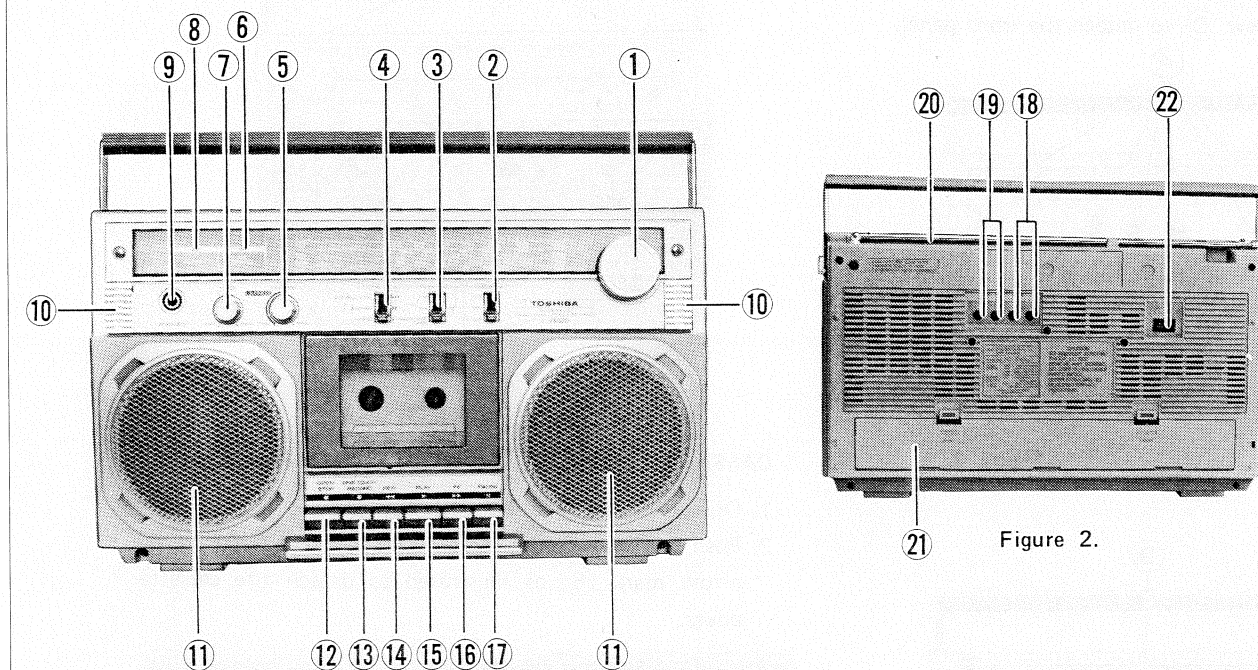
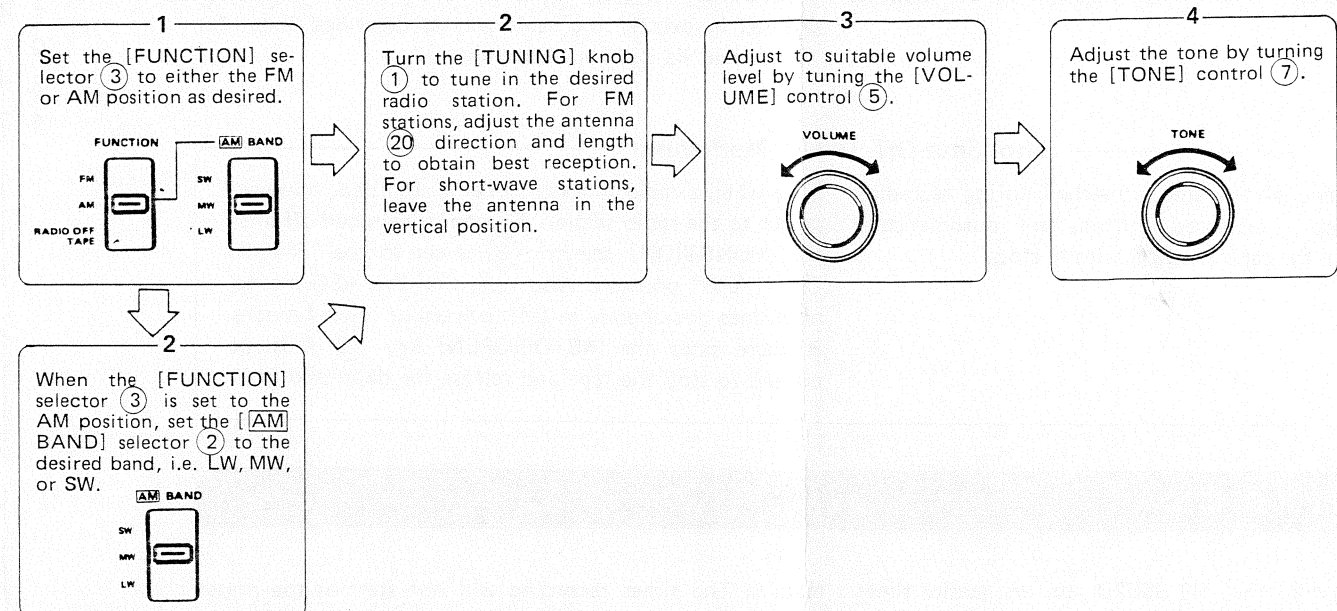


Figure 1.

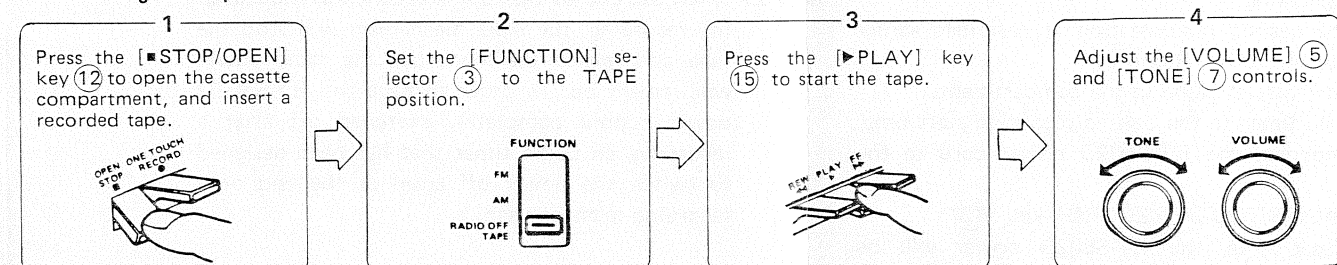
- ① **Tuning Knob**  
 ② **[AM BAND] Selector**  
 For selecting LW, MW and SW bands.  
 ③ **[FUNCTION] Selector**  
 Select the required program source by switching to the corresponding position.  
 FM: For listening to radio broadcast of FM  
 AM: For listening to radio broadcast of AM  
 RADIO OFF/TAPE: For tape playback, and recording via the built-in microphone and external microphones.  
**Note:** In the RADIO OFF/TAPE position the mains power will still be supplied. Therefore, when not in use unplug the cord from the socket.  
 ④ **[MODE/BEAT] Selector**  
 Switch to the STEREO position for stereo listening, or to the MONO position for monaural listening. In the STEREO WIDE position, an even greater stereo effect is obtained. If a beat noise is generated while recording radio broadcasts on LW or MW bands, this beat can be minimized or removed altogether by changing the beat switch position.  
 ⑤ **[VOLUME] Control**  
 Turn to adjust the volume level when listening on the speakers or headphones. In the low volume region marked LOUDNESS (thick line), the treble and bass tones are amplified to give a more natural sound at low listening levels.  
 ⑥ **[FM STEREO] Indicator**  
 This indicator lights when an FM stereo broadcast is received (even when the MODE/BEAT selector is in the MONO position.)  
 ⑦ **[TONE] Control**  
 Turn this knob clockwise to emphasize the tone.  
 ⑧ **[BATTERY] Indicator**  
 This indicator lights while the set is turned on as long as there is sufficient power in the batteries. (When AC mains power is used, the lamp stays on.)  
 ⑨ **[PHONES] Jack**  
 To listen via a pair of headphones, connect to this jack. (Inserting the headphone plug automatically switches off the speakers.)  
 ⑩ **Built-in Microphones**  
 ⑪ **Speaker**  
 ⑫ **[STOP/OPEN] Key**  
 To stop the tape, press this key once. To open the cassette compartment, press a second time.  
 ⑬ **[ONE TOUCH RECORD] Key**  
 When this key is pressed, thereby starting recording.  
 ⑭ **[REW] Key**  
 For rapid rewinding of the tape.  
 ⑮ **[PLAY] Key**  
 Press this key to play recorded tapes.  
 ⑯ **[FF] Key**  
 For rapid forward winding of the tape.  
 ⑰ **[PAUSE] Key**  
 Press to stop the tape temporarily during recording or playback. Press a second time to resume the recording or playback.  
 ⑱ **[MIC] Jacks**  
 Microphones with 3.5mm plugs (outside diameter) may be connected to these jacks.  
 ⑲ **[AUX] Jacks**  
 To record via an external stereo amplifier, connect a cord with phono-plugs (optional) to these jacks.  
 ⑳ **Telescopic Antenna**  
 Adjust the direction and length of this antenna to obtain the optimum sound when listening to FM, and SW radio broadcasts.  
 ㉑ **Batteries Compartment**  
 ㉒ **[AC POWER] Socket**

## OPERATION

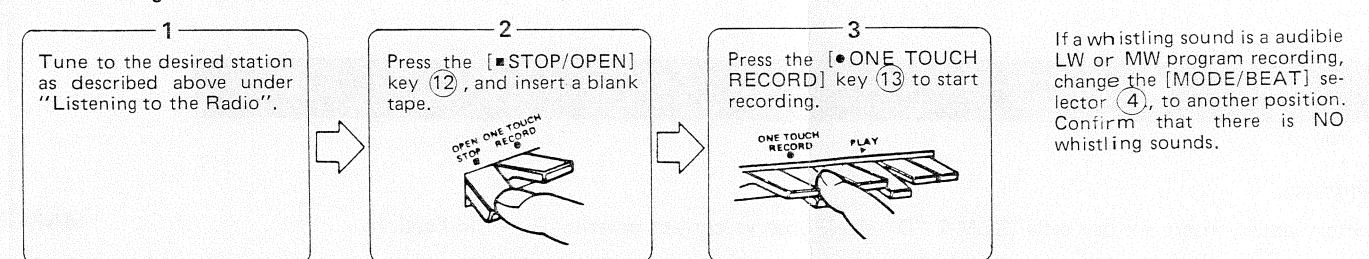
## ■ Listening to the Radio



## ■ Listening to Tapes



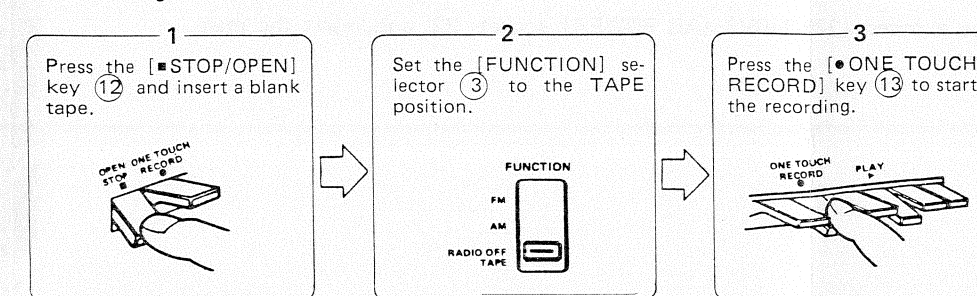
## ■ Recording Radio Broadcasts



Since the RT-S502D has been designed with an automatic recording level adjustment circuit (ALC), a suitable recording level will be set automatically without any further operations.

Furthermore, this set also features a "variable monitor system" permitting the listener to change the listening volume without effecting the recording level.

## ■ Recording via Built-in Microphones



### ■ Recording with External Microphones

Plug external microphones (optional) into the MIC jacks in the rear of the set, and then proceed in exactly the same way as described above for "Recording via Built-in Microphones."

### ■ Recording from other Audio Equipment

An external amplifier can be connected to the [AUX] jacks (19) in the rear of the set. To record, switch the [FUNCTION] selector (3) to the TAPE position, and then proceed in exactly the same way as described above for "Recording via Built-in Microphones."

### Auto Shut-Off (ASO) Mechanism

When the end of the tape is reached during recording and playback, depressed buttons are automatically released and the tape is automatically stop.

Note when a radio program is being recorded, however, power to the radio section will not be switched off until the [FUNCTION] selector (3) is set to the "RADIO OFF/TAPE" position. Also note that the ASO mechanism does not operate in fast forward or rewind modes. In these cases, the [■STOP/OPEN] key (12) must be pressed to stop the tape and release the depressed key.

## TIMER RECORDINGS

■ By connecting the RT-S502D to an audio timer (optional), radio programs can be recorded at any desired preset time.

1. Tune to the desired radio station as described earlier under "Listening to the Radio".
2. Insert a blank cassette tape in the compartment.
3. Set the audio timer to the desired recording start time, and then connect the RT-S502D power cord to the timer.
4. Press the [●ONE TOUCH RECORD] key (13).
5. At the preset time, the RT-S502D power will be switched on, and recording will start automatically.

**Note 1:** The timer recording will not start at the preset time if the [||PAUSE] key (17) has been left set.

**Note 2:** When the end of the tape is reached at the end of the recording, the ASO mechanism will stop the tape and release the keys, but the radio power will remain on. In order to have the RT-S502D power supply completely switched off after a recording, an audio timer that has been designed to switch the power off again at the end of a recording must be used.

## POWER SUPPLY

### Batteries (Optional)

Open the battery cover, insert six dry cells (SUM-1 "D" size), observe correct polarity (+, -) indication.

### To check the condition of the batteries

When the set is switched on, the [BATTERY] indicator (8) should light. If it fails to light, the batteries have run down, and all 6 batteries must be replaced with fresh SUM-1 "D" size batteries.

### AC POWER

Insert female plug of the power cord into the exposed [220-240V] [AC POWER] socket (22) and insert the male plug of the power cord into 220-240V AC outlet.

## 2. DISASSEMBLY INSTRUCTIONS

### FRONT PANEL REMOVAL

1. Remove 6 Knobs (A).
2. Remove 4 Screws (B, C).
3. Remove the cassette cover.
4. Remove 1 Screw (D) to detach the front panel.

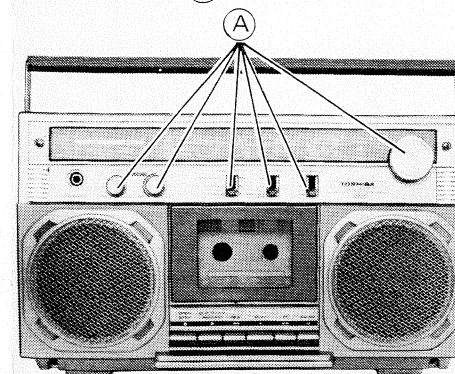


Figure 3.

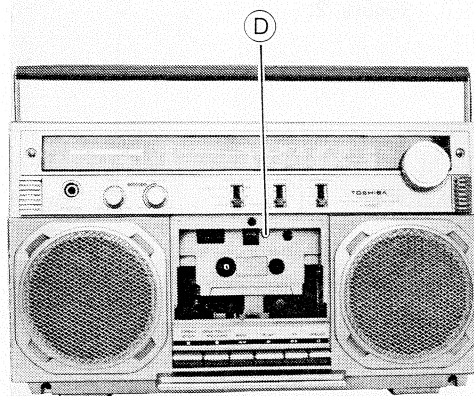


Figure 5.

### MAIN P.C. BOARD REMOVAL

1. Remove 4 Screws (F, G) to detach the P.C. Board.

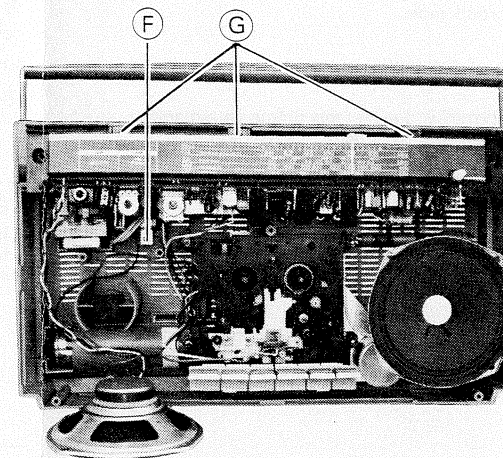


Figure 7.

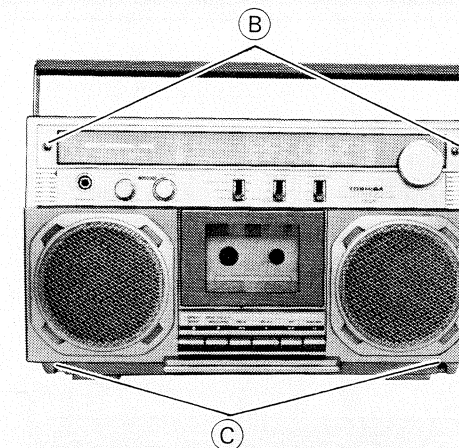


Figure 4.

### CASSETTE COVER REMOVAL

1. Open the cassette cover.
2. Push both ends of cassette cover in the direction of arrow mark (E) as illustrated to detach the cassette cover.

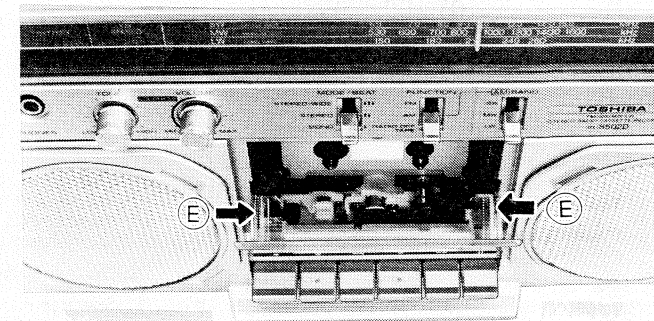


Figure 6.

### MECHANICAL ASSEMBLY REMOVAL

1. Remove 4 Screws (H) to detach the mechanical assembly.
- Main P.C. Board Removed

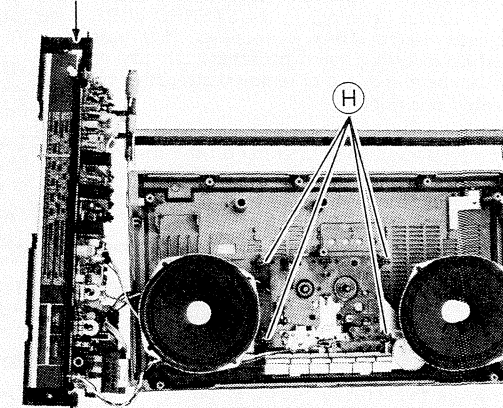


Figure 8.

### 3. HANDLE REMOVAL

When replacing the handle, remove it by cutting the handle washer shown in figure below with nipper etc.

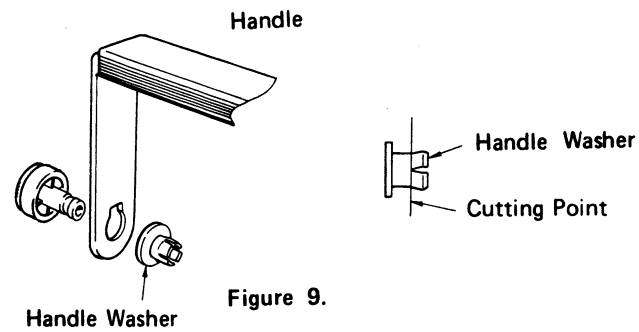


Figure 9.

### 4. METHOD OF P.R.C. REPAIRING

Cut defective printed-resistor-circuit off by knife. See Figure 10. Solder the replacement resistor (See replacement resistor parts list) on the opposite side of printed-circuit-board. See Figure 11.

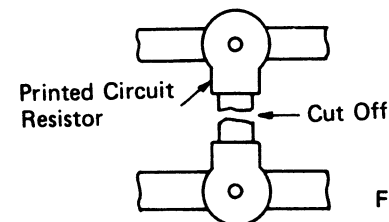


Figure 10.

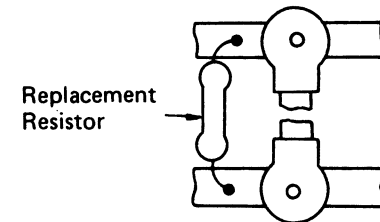


Figure 11.

### 5. DIAL CORD RESTRINGING

1. Turn the variable capacitor fully clockwise.
2. Wind the dial cord in the direction of arrow in numerical order.
3. Mount the pointer at the "0" position of scale with the turning shaft rotating fully counterclockwise.

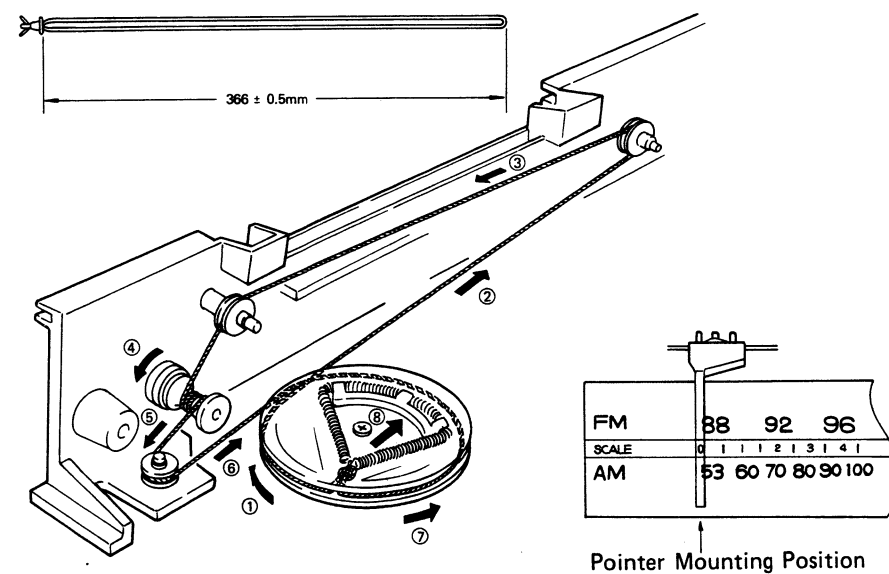
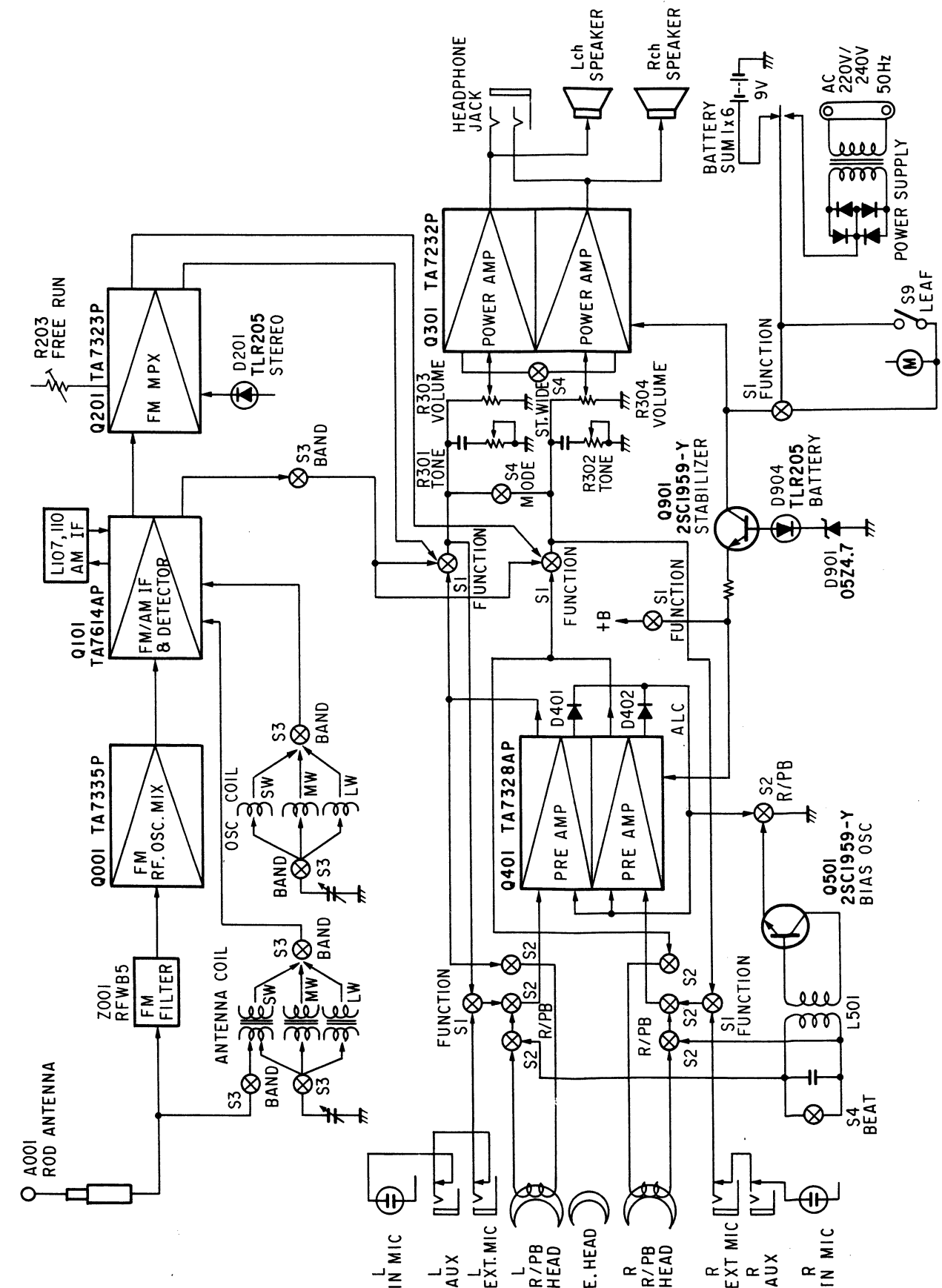


Figure 12.

### 6. BLOCK DIAGRAM



## 7. ALIGNMENT INSTRUCTIONS

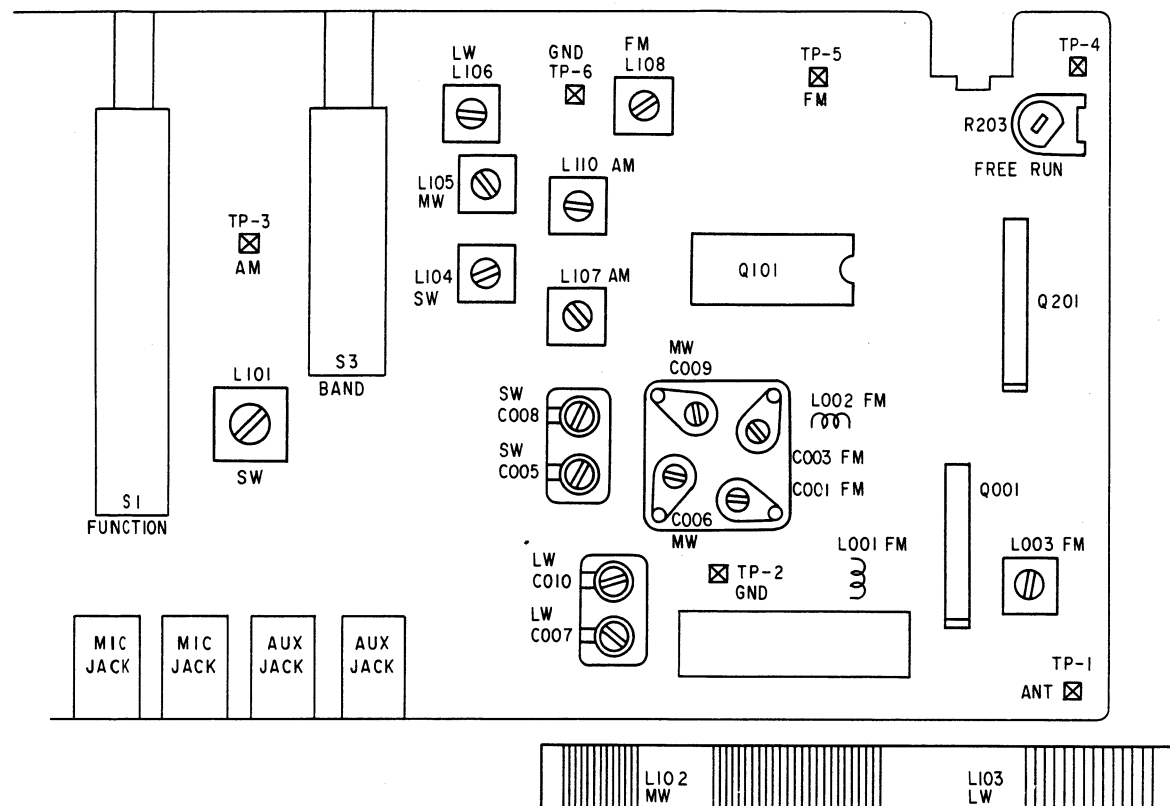


Figure 14.

### TEST EQUIPMENT

1. Signal generator with a frequency range of at least from 140 kHz to 16 MHz AM.
2. Oscilloscope with a wide range amplifier of approximately 100 kHz.
3. Test loop – a coil of any size wire, one turn or more. (MW)
4. A 30 ohm dummy antenna. (SW)
5. VTVM

### AM ALIGNMENT

1. Turn on the AM signal generator and the VTVM allowing a fifteen-minute warm-up period.
2. Using the test loop across the output of the signal generator, inductively connect the signal generator to the radio.
3. Connect the VTVM across the voice coil or a 3.2 ohm dummy load.
4. Set signal generator frequency as listed in ALIGNMENT CHART and maintain a sufficient output level to provide an indication on VTVM.
5. Set volume control at mid-position.
6. Proceed as outlined in the IF-LW, MW and SW ALIGNMENT CHART.

### LW ALIGNMENT CHART

| Band | Step | Signal Generator Frequency        | Radio Dial Setting                                         | Adjustment     | Remarks                        |
|------|------|-----------------------------------|------------------------------------------------------------|----------------|--------------------------------|
| IF   | 1    | 460 kHz                           | Tuning Gang Fully Counter-clockwise.<br>(Lowest Frequency) | L107, L110     | Adjust for maximum indication. |
| LW   | 1    | 142 kHz                           | Tuning Gang Fully Counter-clockwise<br>(Lowest Frequency)  | OSC. Coil L106 | Adjust for Frequency.          |
|      | 2    | 142 kHz                           |                                                            | ANT. Coil L101 | Adjust for maximum indication. |
|      | 3    | Repeat steps 1 and 2 as required. |                                                            |                |                                |
|      | 4    | 280 kHz                           | Tuning Gang Fully Clockwise<br>(Highest Frequency)         | OSC. Trim C010 | Adjust for Frequency.          |
|      | 5    | 280 kHz                           |                                                            | ANT. Trim C007 | Adjust for maximum indication. |
|      | 6    | Repeat steps 4 and 5 as required. |                                                            |                |                                |
|      | 7    | Repeat steps 3 and 6 as required. |                                                            |                |                                |

### MW & SW ALIGNMENT CHART

| Band | Step | Signal Generator Frequency        | Radio Dial Setting                                     | Adjustment          | Remarks                        |
|------|------|-----------------------------------|--------------------------------------------------------|---------------------|--------------------------------|
| MW   | 1    | 510 kHz                           | Tuning Gang Fully Counter-clockwise (Lowest Frequency) | OSC. Coil L105 (MW) | Adjust for maximum indication. |
|      | 2    | 1650 kHz                          | Tuning Gang Fully Clockwise (Highest Frequency)        | OSC. Trim. C009     | Adjust for maximum indication. |
|      | 3    | Repeat steps 2 and 3 as required. |                                                        |                     |                                |
|      | 4    | 600 kHz                           | Tune to Signal.                                        | Ant. Coil L102 (MW) | Adjust for maximum indication. |
|      | 5    | 1400 kHz                          | Tune to Signal.                                        | Ant. Trim. C006     | Adjust for maximum indication. |
|      | 6    | Repeat steps 5 and 6 as required. |                                                        |                     |                                |
| SW   | 1    | 5.75 MHz                          | Tuning Gang Fully Counter-clockwise (Lowest Frequency) | OSC. Coil L104      | Adjust for maximum indication. |
|      | 2    | 16 MHz                            | Tuning Gang Fully Clockwise (Highest Frequency)        | OSC. Trim. C008     | Adjust for maximum indication. |
|      | 3    | Repeat steps 1 and 2 as required. |                                                        |                     |                                |
|      | 4    | 6.5 MHz                           | Tune to Signal.                                        | Ant. Trim. L101     | Adjust for maximum indication. |
|      | 5    | 14 MHz                            | Tune to Signal.                                        | Ant. Trim. C005     | Adjust for maximum indication. |
|      | 6    | Repeat steps 4 and 5 as required. |                                                        |                     |                                |

**FM-IF ALIGNMENT**

1. Set the selector switch to FM position.
2. Turn on both sweep generator and oscilloscope, and allow a fifteen-minute warm-up period.
3. Connect the RF SWEEP SIGNAL OUTPUT from the signal generator through the loop antenna to the receiver.
4. Connect the oscilloscope vertical input directly to the test point TP-5 and connect the shielded lead to the test point E or chassis ground.
5. Connect the SWEEP VOLTAGE OUTPUT of the sweep generator to the oscilloscope.
6. Proceed as outlined in the FM-IF ALIGNMENT CHART.

**FM-IF ALIGNMENT CHART**

| Step | Signal coupling                                                               | Equip.                                                         | Tuning                                                 | Connection                                                                                                                           | Adjust. point | Pattern                                                                                                                                                                                             |
|------|-------------------------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Connect sweep generator output to a three-turn loop antenna of 10cm diameter. | Sweep generator of 10.7 MHz center freq. with 10.7 MHz marker. | Tuning Knob fully counterclockwise (Lowest Frequency.) | Set scope for connecting output signal from TUN OUT to vertical axis of scope "V" and sweep generator output to horizontal axis "H". | L003 L108     | Turn the coil L108 fully counterclockwise to obtain a single peak. Fig. 16. Adjust coil L003 in order until the best single peak is obtained: Finally turn the coil L108 to obtain S curb. Fig. 17. |

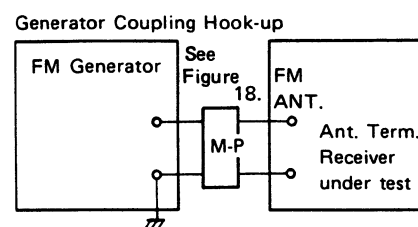
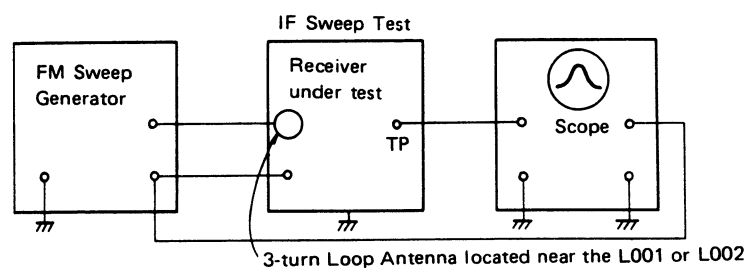


Figure 15.

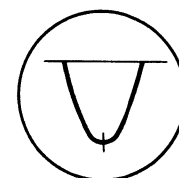


Figure 16.

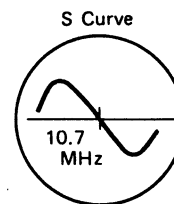


Figure 17.

**FM-RF ALIGNMENT**

1. Turn on the signal generator and the VTVM, and allow a fifteen-minute warm-up period.
2. Connect the signal generator output through a 75 ohm dummy antenna across FM ANT.
3. Connect the VTVM across the voice coil or a 3.2 ohm dummy load.
4. Set the volume control to mid-position.
5. Adjust the signal generator frequency as indicated in FM-RF ALIGNMENT CHART, and maintain a sufficient signal output level to provide a measurable indication.
6. Proceed as outlined in the FM-RF ALIGNMENT CHART.

**FM-RF ALIGNMENT CHART**

| Step | Signal Generator                  | Radio Dial Setting                                    | Adjustment      | Remarks                              |
|------|-----------------------------------|-------------------------------------------------------|-----------------|--------------------------------------|
| 1    | 87.5 MHz                          | Tuning Knob fully Counterclockwise (Lowest Frequency) | OSC. Coil L002  | Adjust for maximum output indication |
| 2    | 109 MHz                           | Tuning Knob fully Clockwise (Highest Frequency)       | OSC. Trim. C003 | Adjust for maximum output indication |
| 3    | Repeat steps 1 and 2 as required. |                                                       |                 |                                      |
| 4    | 90 MHz                            | Tune to signal                                        | Ant. Coil L001  | Adjust for maximum output indication |
| 5    | 106 MHz                           |                                                       | Ant. Trim. C001 |                                      |
| 6    | Repeat steps 4 and 5 as required. |                                                       |                 |                                      |

**CAUTION:** When realigning the FM Receiving Frequency, the lowest side of the frequency range must not be below 87.5 MHz in order to comply with FTZ regulations in West Germany.

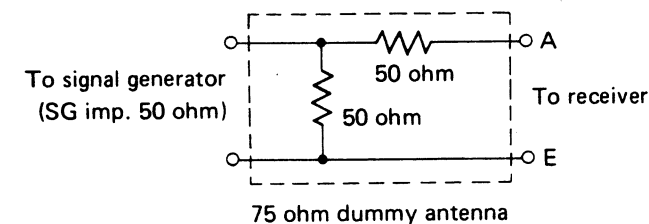


Figure 18.

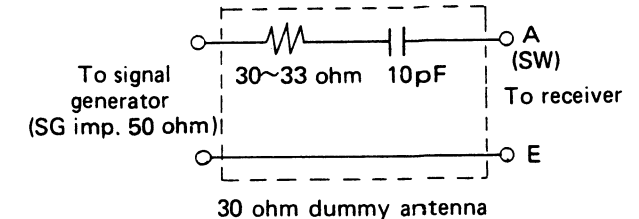


Figure 19.

**FREE RUN FREQUENCY ALIGNMENT**

Adjust R203 under no signal condition so as to obtain 76 kHz  $\pm$  200 Hz.

**RECORD/PLAYBACK HEAD ADJUSTMENT.**

A 6.3 KHz standard tape must be used for this adjustment. Connect a VTVM or an oscilloscope to the EXT Speaker jack and adjust the azimuth by using a phillips screwdriver to maintain the maximum output voltage.

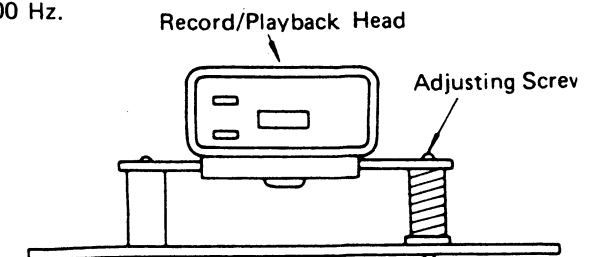


Figure 20. Record/Playback Head Adjustment

## 8. ELECTRICAL PARTS LOCATIONS

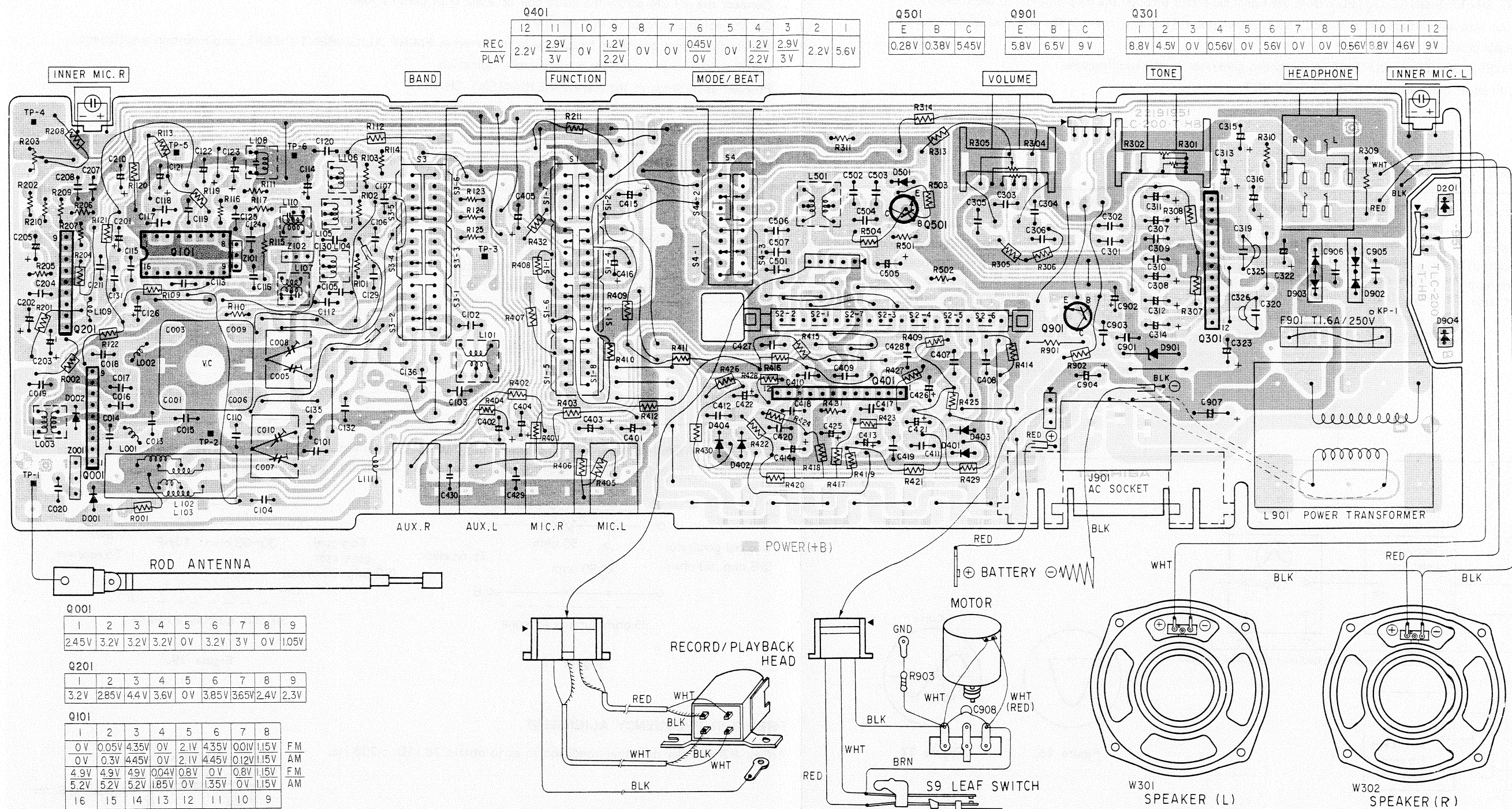


Figure 21.

## 9. SCHEMATIC DIAGRAM

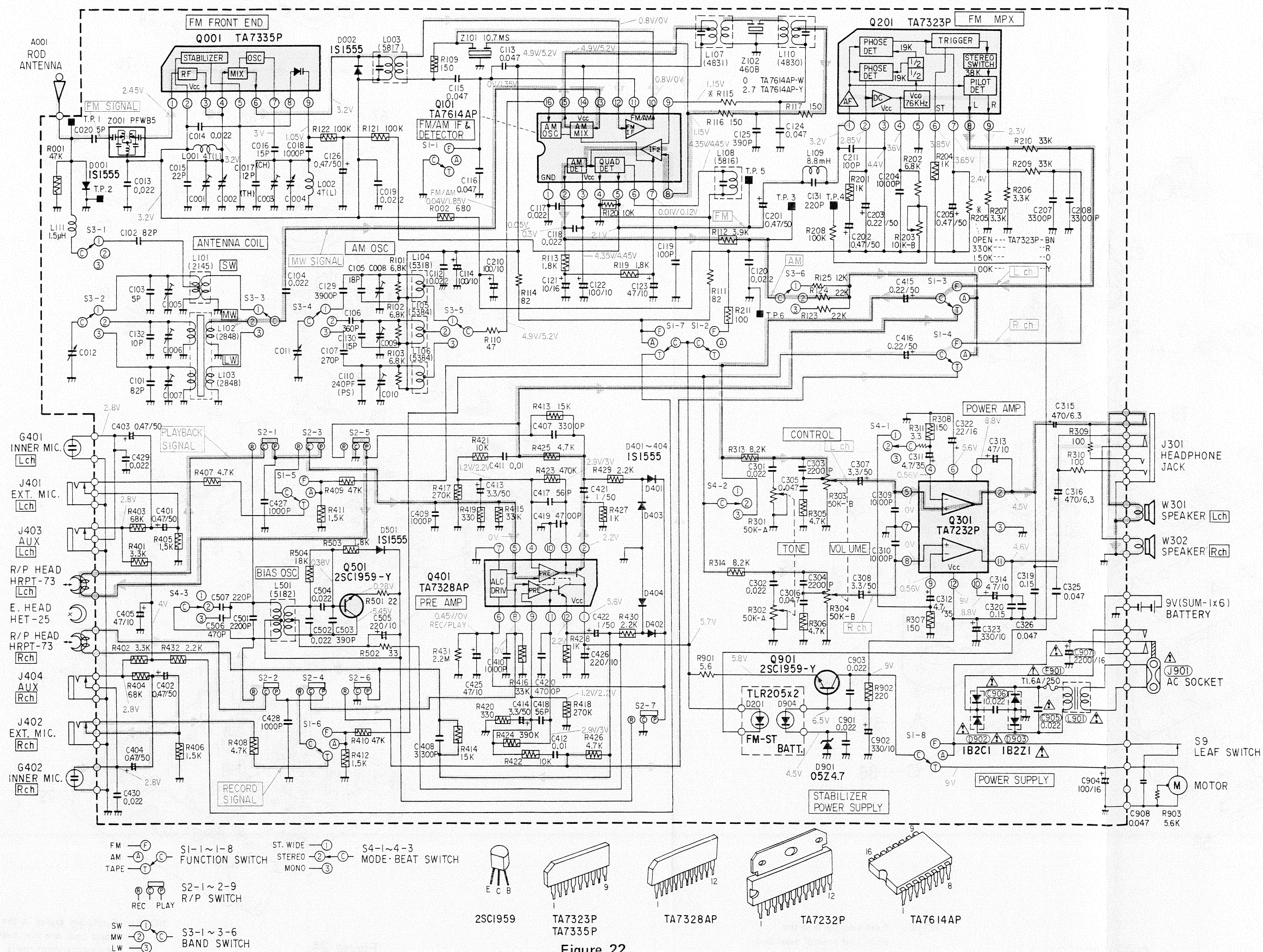


Figure 22.

## 10-1. MECHANISM EXPLODED VIEW (UPPER)

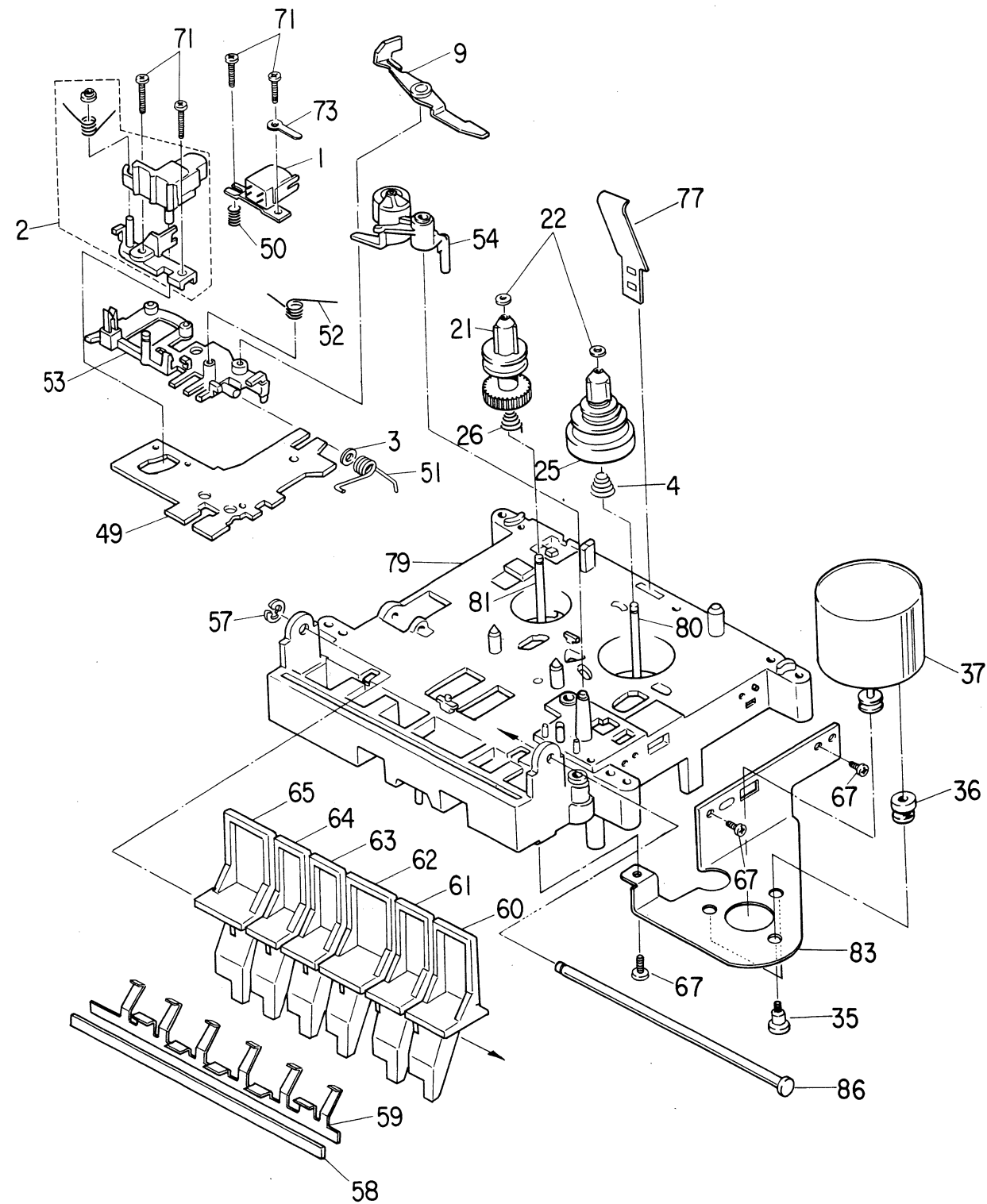


Figure 23.

NOTE: Excluded parts in the Parts List are not available as replacement parts.

## 10-2. MECHANISM EXPLODED VIEW (LOWER)

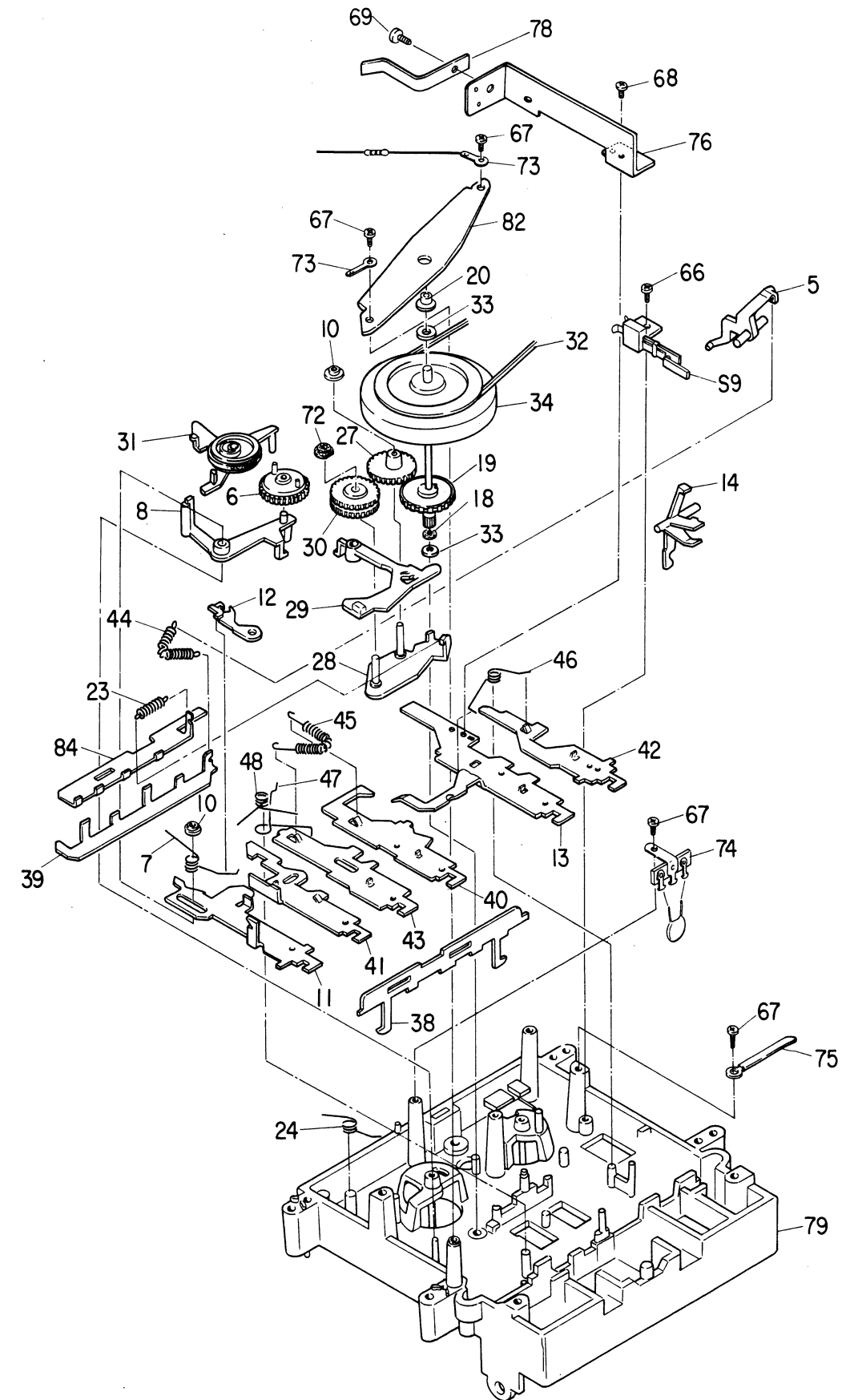


Figure 24.

NOTE: Excluded parts in the Parts List are not available as replacement parts.

## 10-3 . MECHANISM PARTS LIST

| Symbol No.       | Part No. | Description                       |
|------------------|----------|-----------------------------------|
| <b>MECHANISM</b> |          |                                   |
| 1                | 22217351 | Head, Record/Playback, HRPT-73    |
| 2                | 25719545 | Head Ass'y, Erase                 |
| 3                | 25764550 | Washer                            |
| 4                | 25772254 | Spring, Back Tension              |
| 5                | 25782253 | Lever, Cassette Up                |
| 6                | 25756247 | ASO Gear                          |
| 7                | 25773367 | Spring, ASO Lever                 |
| 8                | 25782247 | ASO Lever                         |
| 9                | 25782249 | Lever, Detector                   |
| 10               | 25783195 | Bush                              |
| 11               | 25741599 | Operation Plate, Pause            |
| 12               | 25782173 | Lever, Pause Lock                 |
| 13               | 25741828 | Operation Plate, Record           |
| 14               | 25782248 | Lever, Record Lock                |
| 18               | 25764510 | Washer                            |
| 19               | 25751579 | Gear, Flywheel                    |
| 20               | 25725340 | Holder, Flywheel                  |
| 21               | 25754338 | Hub Plate, Supply                 |
| 22               | 25764549 | Washer                            |
| 23               | 25771617 | Spring                            |
| 24               | 25773370 | Spring, Idler                     |
| 25               | 25712348 | Hub Plate, Take-Up                |
| 26               | 25772578 | Spring, Back Tension              |
| 27               | 25756179 | Gear, High-speed                  |
| 28               | 25782251 | Lever, Rewind                     |
| 29               | 25782252 | Lever, Fast Forward               |
| 30               | 25719491 | Gear Ass'y, High-speed            |
| 31               | 25719495 | Idler Mount Ass'y                 |
| 32               | 25755154 | Belt                              |
| 33               | 25764398 | Washer                            |
| 34               | 25717391 | Flywheel Ass'y                    |
| 35               | 22707429 | Screw, 2.6 $\phi$ x 1.8mm x 4.9mm |
| 36               | 25761238 | Cushion, Motor                    |
| 37               | 25791273 | Motor Ass'y                       |
| 38               | 25732340 | Stop Plate                        |
| 40               | 25741827 | Operation Plate, Rewind           |
| 41               | 25741826 | Operation Plate, Fast Forward     |
| 42               | 25741759 | Operation Plate, Stop             |
| 43               | 25741844 | Operation Plate, Play             |
| 44               | 25771955 | Spring, Lock Slider               |
| 45               | 25771956 | Spring, Operation Plate           |
| 46               | 25773369 | Spring, Operation Plate           |
| 47               | 25773405 | Spring, Crick                     |
| 48               | 25773484 | Spring, Operation Plate           |
| 49               | 25741825 | Head Slider                       |
| 50               | 25772585 | Spring, Azimush                   |
| 51               | 25773365 | Spring, Head Slider               |
| 52               | 25773366 | Spring, Pressure Roller           |
| 53               | 25783224 | Head Mount                        |

| Symbol No. | Part No. | Description                          |
|------------|----------|--------------------------------------|
| 54         | 25717392 | Pressure Roller Ass'y                |
| 57         | 22703280 | Retaining Ring, 4 $\phi$             |
| 58         | 25761403 | Button Cushion                       |
| 59         | 25779133 | Spring, Button                       |
| 60         | 25837590 | Knob, Pause                          |
| 61         | 25837591 | Knob, Fast Forward                   |
| 62         | 25837592 | Knob, Play                           |
| 63         | 25837593 | Knob, Rewind                         |
| 64         | 25837594 | Knob, Record                         |
| 65         | 25837595 | Knob, Stop                           |
| 66         | 22707490 | Screw, 3 $\phi$ x 8mm, BID Tapping   |
| 67         | 22707301 | Screw, 2.6 $\phi$ x 8mm, BID Tapping |
| 68         | 22707350 | Screw, 2.6 $\phi$ x 5mm, DTBID       |
| 69         | 22707494 | Screw, 2.6 $\phi$ x 4mm, DTBID       |
| 71         | 22707322 | Screw, 2 $\phi$ x 10mm, DTBID        |
| 72         | 25783226 | Bush                                 |

# 11-1. CABINET EXPLODED VIEW

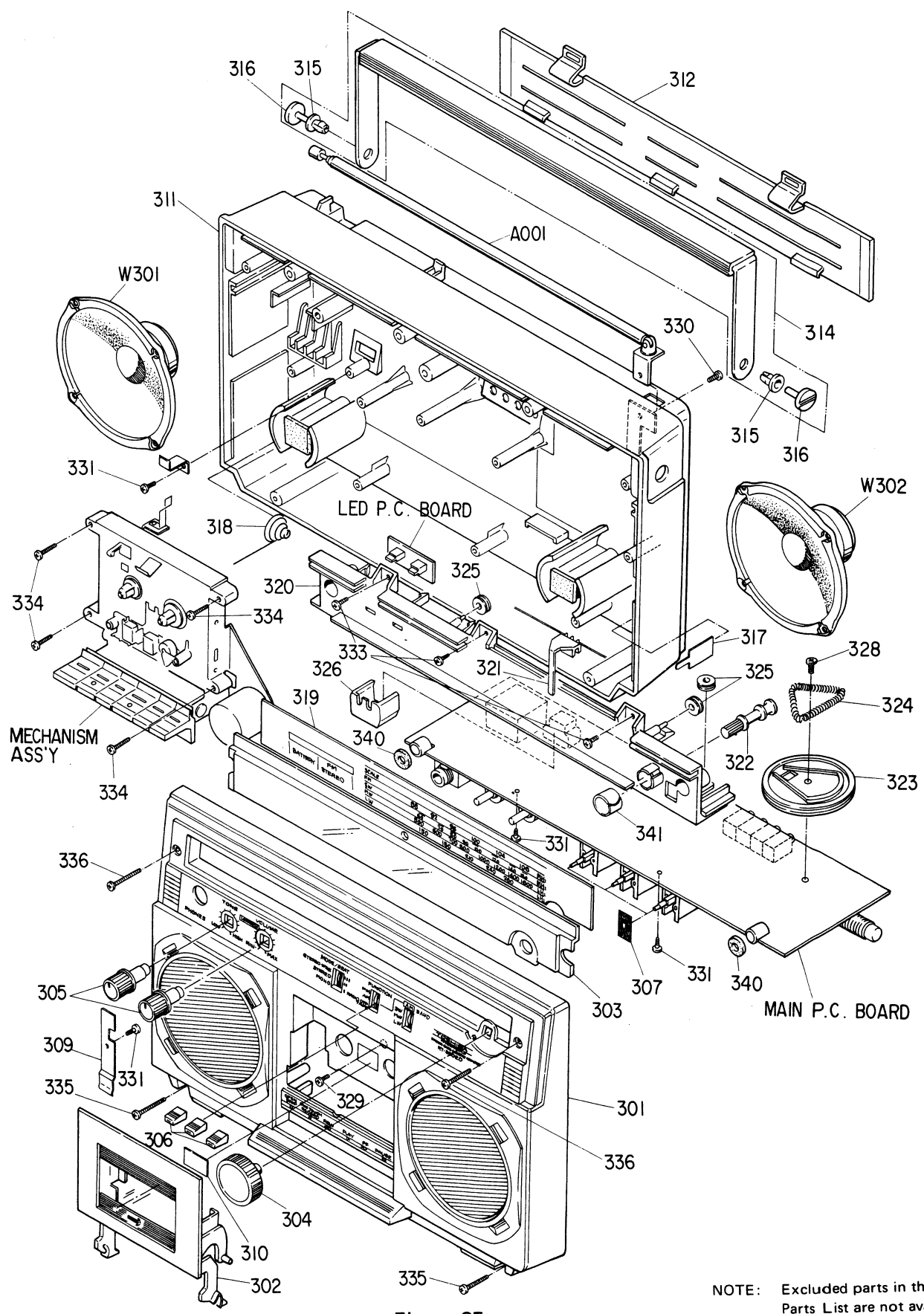


Figure 25.

NOTE: Excluded parts in the Parts List are not available as replacement parts.

## 11-2. CABINET PARTS LIST

**CAUTION:** The  mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

| Symbol No.                                                                              | Part No. | Description                                |
|-----------------------------------------------------------------------------------------|----------|--------------------------------------------|
| <b>CABINET PARTS</b>                                                                    |          |                                            |
| 301                                                                                     | 25881122 | Front Cabinet Ass'y                        |
| 302                                                                                     | 25838700 | Cassette Cover                             |
| 303                                                                                     | 25838701 | Dial Cover                                 |
| 304                                                                                     | 25837389 | Knob, Tuning                               |
| 305                                                                                     | 25837387 | Knob, Tone/Volume                          |
| 306                                                                                     | 25837390 | Knob, Mode/Beat/Function                   |
| 307                                                                                     | 25858490 | Switch Cover                               |
| 309                                                                                     | 25773554 | Spring, Cassette                           |
| 310                                                                                     | 25824247 | Reflector                                  |
| 311                                                                                     | 25881173 | Back Cabinet Ass'y                         |
| 312                                                                                     | 25838703 | Battery Cover                              |
| 314                                                                                     | 25815222 | Handle Ass'y                               |
| 315                                                                                     | 25835411 | Washer, Handle                             |
| 316                                                                                     | 25835451 | Bush, Handle                               |
| 317                                                                                     | 25864007 | Contact, Battery                           |
| 318                                                                                     | 25776318 | Spring, Battery                            |
| 319                                                                                     | 25828960 | Dial Plate                                 |
| 320                                                                                     | 22714085 | Tuner Frame                                |
| 321                                                                                     | 22741361 | Pointer (Cursor)                           |
| 322                                                                                     | 22749281 | Tuning Shaft                               |
| 323                                                                                     | 22742223 | Drum                                       |
| 324                                                                                     | 22771306 | Spring, Drum                               |
| 325                                                                                     | 22742162 | Pulley                                     |
|  326 | 22167688 | Jack Back Cover                            |
| 328                                                                                     | 22707473 | Screw, 2.6 $\phi$ x 6mm, BID               |
| 329                                                                                     | 22707303 | Screw, 2.6 $\phi$ x 10mm, BID<br>Tapping   |
| 330                                                                                     | 22707163 | Screw, 3 $\phi$ x 10mm, BID BLK            |
| 331                                                                                     | 22707165 | Screw, 3 $\phi$ x 10mm, BID<br>Tapping     |
| 333                                                                                     | 22707276 | Screw, 3 $\phi$ x 16mm, BID<br>Tapping     |
| 334                                                                                     | 22707552 | Screw, 3 $\phi$ x 30mm, BID<br>Tapping     |
| 335                                                                                     | 22701334 | Screw, 3 $\phi$ x 35mm, Tapping,<br>BLK    |
| 336                                                                                     | 22707706 | Screw, 3 $\phi$ x 45mm, Tapping,<br>Chrome |

## 12. PARTS LIST

**CAUTION:** The  $\triangle$  mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

| Symbol No.                            | Part No. | Description                                  |
|---------------------------------------|----------|----------------------------------------------|
| <b>IC'S, TRANSISTORS &amp; DIODES</b> |          |                                              |
| Q001                                  |          | IC, TA7335P                                  |
| Q101                                  |          | IC, TA7614AP-Y-W/Y                           |
| Q201                                  |          | IC, TA7323P-O, Y                             |
| Q301                                  |          | IC, TA7232P                                  |
| Q401                                  |          | IC, TA7328AP                                 |
| Q501                                  |          | Transistor, 2SC1959-Y                        |
| Q901                                  |          | Transistor, 2SC1959-Y                        |
| D001, 002                             |          | Diode, 1S1555V                               |
| D201                                  |          | Diode, TLR205                                |
| D401, 402,<br>403, 404                |          | Diode, 1S1555V                               |
| D501                                  |          | Diode, 1S1555V                               |
| D901                                  |          | Diode, 05Z4.7                                |
| $\triangle$ D902                      |          | Diode, 1B2C1 (T)                             |
| $\triangle$ D903                      |          | Diode, 1B2Z1 (T)                             |
| D904                                  |          | Diode, TLR205                                |
| <b>COILS &amp; TRANSFORMERS</b>       |          |                                              |
| L001                                  | 22294428 | Coil, FM RF                                  |
| L002                                  | 22294427 | Coil, FM Oscillator                          |
| L003                                  | 22265817 | IF Transformer, FM                           |
| L101                                  | 22282145 | Coil, SW Antenna                             |
| L102, 103                             | 22242848 | Coil, MW/LW Antenna                          |
| L104                                  | 22285318 | Coil, SW Oscillator                          |
| L105                                  | 22245384 | Coil, MW Oscillator                          |
| L106                                  | 22245384 | Coil, LW Oscillator                          |
| L107                                  | 22264831 | IF Transformer, AM                           |
| L108                                  | 22265816 | IF Transformer, FM                           |
| L109                                  | 22232219 | Coil, Choke, 8.85mH                          |
| L110                                  | 22264830 | IF Transformer, AM                           |
| L111                                  | 22291103 | Coil, Choke, 1.5 $\mu$ H                     |
| L501                                  | 22235182 | Coil, Bias Oscillator                        |
| $\triangle$ L901                      | 22223966 | Transformer, Power                           |
| <b>ELECTRICAL PARTS</b>               |          |                                              |
| S1                                    | 22195155 | Switch, Lever, Function<br>FM/AM/TAPE        |
| S2                                    | 22195815 | Switch, Slide, Record/<br>Playback           |
| S3                                    | 22195161 | Switch, Lever, Band Selector<br>SW/MW/LW     |
| S4                                    | 22195072 | Switch, Lever, Mode-Beat<br>WIDE/STEREO/MONO |
| S9                                    | 22195555 | Switch, Leaf, Motor                          |

| Symbol No.                                                                                                                                                                                                              | Part No. | Description                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------|
| J301                                                                                                                                                                                                                    | 22163778 | Jack, Headphone, 6 $\phi$       |
| J401, 402                                                                                                                                                                                                               | 22163666 | Jack, EXT MIC, 3.5 $\phi$       |
| J403, 404                                                                                                                                                                                                               | 22163666 | Jack, AUX, 3.5 $\phi$           |
| $\triangle$ J901                                                                                                                                                                                                        | 22167820 | AC Socket, 2P                   |
| Z001                                                                                                                                                                                                                    | 22153121 | Filter, FM RF                   |
| Z101                                                                                                                                                                                                                    | 22153058 | Filter, Ceramic, 10.7MS         |
| Z102                                                                                                                                                                                                                    | 22153083 | Filter, Ceramic 460B            |
| $\triangle$ F901                                                                                                                                                                                                        | 22144293 | Fuse, T 1.6A/250V               |
| A001                                                                                                                                                                                                                    | 22124489 | Rod Antenna                     |
| G401, 402                                                                                                                                                                                                               | 22154232 | Microphone Unit                 |
| W301, 302                                                                                                                                                                                                               | 22152363 | Speaker, 12cm, 3.2 ohm,<br>2.5W |
| EP01                                                                                                                                                                                                                    | 22165047 | Fuse Holder                     |
| <b>CAPACITORS</b><br>D= $\pm 0.5\text{pF}$ , J= $\pm 5\%$ , K= $\pm 10\%$ , M= $\pm 20\%$ , Z= $-20+80\%$<br><b>ABBREVIATIONS:</b> CD=Ceramic Disk, EL=Electrolytic,<br>MY=Mylar, BL=Barrier Layer,<br>PP=Polypropylene |          |                                 |
| C001, 002,<br>003, 004,<br>006, 009,<br>011, 012                                                                                                                                                                        | 22308213 | Variable, VC-20/335             |
| C005, 008                                                                                                                                                                                                               | 22309168 | Trimmer, Max 10pF               |
| C007, 010                                                                                                                                                                                                               | 22309155 | Trimmer, Max 20pF               |
| C013                                                                                                                                                                                                                    | 22342223 | CD, 0.022mfd, 50V, Z            |
| C014                                                                                                                                                                                                                    | 22342223 | CD, 0.022mfd, 50V, Z            |
| C015                                                                                                                                                                                                                    | 22362220 | CD, 22pF, 50V, K                |
| C016                                                                                                                                                                                                                    | 22360132 | CD, 15pF, 50V, J, CH            |
| C017                                                                                                                                                                                                                    | 22360315 | CD, 12pF, 50V, J, TH            |
| C018                                                                                                                                                                                                                    | 22349102 | CD, 1000pF, 50V, K              |
| C019                                                                                                                                                                                                                    | 22342223 | CD, 0.022mfd, 50V, Z            |
| C020                                                                                                                                                                                                                    | 22361509 | CD, 5pF, 50V, D                 |
| C101                                                                                                                                                                                                                    | 22362820 | CD, 82pF, 50V, K                |
| C102                                                                                                                                                                                                                    | 22362820 | CD, 82pF, 50V, K                |
| C103                                                                                                                                                                                                                    | 22361509 | CD, 5pF, 50V, D                 |
| C104                                                                                                                                                                                                                    | 22342223 | CD, 0.022mfd, 50V, Z            |
| C105                                                                                                                                                                                                                    | 22362180 | CD, 18pF, 50V, K                |
| C106                                                                                                                                                                                                                    | 22321016 | PP, 360pF, 50V, J               |
| C107                                                                                                                                                                                                                    | 22321048 | PP, 270pF, 50V, J               |
| C110                                                                                                                                                                                                                    | 22321218 | PP, 240pF, 50V, J               |
| C112                                                                                                                                                                                                                    | 22342223 | CD, 0.022mfd, 50V, Z            |
| C113                                                                                                                                                                                                                    | 22360484 | CD, 0.047mfd, 50V, Z            |
| C114                                                                                                                                                                                                                    | 22443101 | EL, 100mfd, 10V                 |
| C115                                                                                                                                                                                                                    | 22360484 | CD, 0.047mfd, 50V, Z            |
| C116                                                                                                                                                                                                                    | 22360484 | CD, 0.047mfd, 50V, Z            |
| C117                                                                                                                                                                                                                    | 22360329 | BL, 0.022mfd, 25V, M            |
| C118                                                                                                                                                                                                                    | 22360329 | BL, 0.022mfd, 25V, M            |
| C119                                                                                                                                                                                                                    | 22362101 | CD, 100pF, 50V, K               |

| Symbol No. | Part No. | Description          |
|------------|----------|----------------------|
| C120       | 22342223 | CD, 0.022mfd, 50V, Z |
| C121       | 22445100 | EL, 10mfd, 16V       |
| C122       | 22443101 | EL, 100mfd, 10V      |
| C123       | 22443470 | EL, 47mfd, 10V       |
| C124       | 22360484 | CD, 0.047mfd, 50V, Z |
| C125       | 22349391 | CD, 390pF, 50V, K    |
| C126       | 22448478 | EL, 0.47mfd, 50V     |
| C129       | 22349392 | CD, 3900pF, 50V, K   |
| C130       | 22362150 | CD, 15pF, 50V, K     |
| C131       | 22362221 | CD, 220pF, 50V, K    |
| C132       | 22361509 | CD, 5pF, 50V, D      |
| C201       | 22448478 | EL, 0.47mfd, 50V     |
| C202       | 22448478 | EL, 0.47mfd, 50V     |
| C203       | 22488228 | EL, 0.22mfd, 50V     |
| C204       | 22371102 | MY, 1000pF, 50V, J   |
| C205       | 22448478 | EL, 0.47mfd, 50V     |
| C207, 208  | 22349332 | CD, 3300pF, 50V, K   |
| C210       | 22443101 | EL, 100mfd, 10V      |
| C211       | 22362101 | CD, 100pF, 50V, K    |
| C301, 302  | 22342223 | CD, 0.022mfd, 50V, Z |
| C303, 304  | 22349222 | CD, 2200pF, 50V, K   |
| C305, 306  | 22360484 | CD, 0.047mfd, 50V, Z |
| C307, 308  | 22488339 | EL, 3.3mfd, 50V      |
| C309, 310  | 22349102 | CD, 1000pF, 50V, K   |
| C311, 312  | 22447479 | EL, 4.7mfd, 35V      |
| C313, 314  | 22443470 | EL, 47mfd, 10V       |
| C315, 316  | 22442471 | EL, 470mfd, 6.3V     |
| C319, 320  | 22372154 | MY, 0.15mfd, 50V, K  |
| C322       | 22445220 | EL, 22mfd, 16V       |
| C323       | 22445331 | EL, 330mfd, 16V      |
| C401, 402  | 22448478 | EL, 0.47mfd, 50V     |
| C403, 404  | 22448478 | EL, 0.47mfd, 50V     |
| C405       | 22443470 | EL, 47mfd, 10V       |
| C407, 408  | 22349332 | CD, 3300pF, 50V, K   |
| C409, 410  | 22349102 | CD, 1000pF, 50V, K   |
| C411, 412  | 22360327 | BL, 0.01mfd, 25V, M  |
| C413, 414  | 22488339 | EL, 3.3mfd, 50V      |
| C415, 416  | 22488228 | EL, 0.22mfd, 50V     |
| C417, 418  | 22362560 | CD, 56pF, 50V, K     |
| C419, 420  | 22349472 | CD, 4700pF, 50V, K   |
| C421, 422  | 22448109 | EL, 1mfd, 50V        |
| C425       | 22443470 | EL, 47mfd, 10V       |
| C426       | 22443331 | EL, 330mfd, 10V      |
| C427, 428  | 22349102 | CD, 1000pF, 50V, K   |
| C429, 430  | 22342223 | CD, 0.022mfd, 50V, Z |
| C501       | 22371222 | MY, 2200pF, 50V, J   |
| C502       | 22360329 | BL, 0.022mfd, 25V, M |
| C503       | 22349391 | CD, 390pF, 50V, K    |
| C504       | 22360329 | BL, 0.022mfd, 25V, M |
| C505       | 22443221 | EL, 220mfd, 10V      |
| C506       | 22321053 | PP, 470pF, 50V, J    |
| C507       | 22321164 | PP, 220pF, 50V, J    |
| C901       | 22342223 | CD, 0.022mfd, 50V, Z |

| Symbol No.                                                  | Part No. | Description                     |
|-------------------------------------------------------------|----------|---------------------------------|
| C902                                                        | 22443331 | EL, 330mfd, 10V                 |
| C903                                                        | 22342223 | CD, 0.022mfd, 50V, Z            |
| C904                                                        | 22445101 | EL, 100mfd, 16V                 |
| ⚠ C905                                                      | 22342223 | CD, 0.022mfd, 50V, Z            |
| ⚠ C906                                                      | 22342223 | CD, 0.022mfd, 50V, Z            |
| ⚠ C907                                                      | 22445222 | EL, 2200mfd, 16V                |
| C908                                                        | 22342473 | CD, 0.047mfd, 50V, Z            |
| C325, C326                                                  | 22342473 | CD, 0.047mfd, 50V, Z            |
| <b>RESISTORS</b>                                            |          |                                 |
| Resistors are carbon film 1/4W, ±5% unless otherwise noted. |          |                                 |
| PRC is short for the printed resistor circuit.              |          |                                 |
| K=1000, M=1000000.                                          |          |                                 |
| R001                                                        | 22555473 | 47K ohm (PRC)                   |
| R002                                                        | 22555681 | 680 ohm (PRC)                   |
| R101                                                        | 22555682 | 6.8K ohm                        |
| R102                                                        | 22555682 | 6.8K ohm                        |
| R103                                                        | 22555682 | 6.8K ohm                        |
| R109                                                        | 22555151 | 150 ohm (PRC)                   |
| R110                                                        | 22555470 | 47 ohm                          |
| R111                                                        | 22555820 | 82 ohm                          |
| R112                                                        | 22555392 | 3.9K ohm (PRC)                  |
| R113                                                        | 22555182 | 1.8K ohm (PRC)                  |
| R114                                                        | 22555820 | 82 ohm                          |
| R115                                                        |          | 0 ohm TA7614AP-W                |
| R115                                                        | 22545279 | 2.7 ohm TA7614AP-Y              |
| R116                                                        | 22555151 | 150 ohm                         |
| R117                                                        | 22555151 | 150 ohm                         |
| R119                                                        | 22555182 | 1.8K ohm (PRC)                  |
| R120                                                        | 22555103 | 10K ohm (PRC)                   |
| R121                                                        | 22555104 | 100K ohm (PRC)                  |
| R122                                                        | 22555104 | 100K ohm (PRC)                  |
| R123                                                        | 22555223 | 22K ohm                         |
| R124                                                        | 22555223 | 22K ohm                         |
| R125                                                        | 22555123 | 12K ohm                         |
| R201                                                        | 22555102 | 1K ohm (PRC)                    |
| R202                                                        | 22555682 | 6.8K ohm                        |
| R203                                                        | 22658498 | 10K ohm, B, Semi-fixed Variable |
| R204                                                        | 22555102 | 1K ohm (PRC)                    |
| R205                                                        |          | Open, TA7323P-BN                |
| R205                                                        | 22555334 | 330K ohm, TA7323P-R             |
| R205                                                        | 22555154 | 150K ohm, TA7323P-O             |
| R205                                                        | 22555104 | 100K ohm, TA7323P-Y             |
| R206                                                        | 22555332 | 3.3K ohm                        |
| R207                                                        | 22555332 | 3.3K ohm                        |
| R208                                                        | 22555104 | 100K ohm                        |
| R209, 210                                                   | 22555333 | 33K ohm                         |
| R211                                                        | 22555101 | 100 ohm (PRC)                   |
| R301, 302                                                   | 22651543 | 50K ohm, A, Variable, Tone      |
| R303, 304                                                   | 22651536 | 50K ohm, B, Variable, Volume    |
| R305, 306                                                   | 22555472 | 4.7K ohm (PRC)                  |

| Symbol No.  | Part No. | Description             |
|-------------|----------|-------------------------|
| R307, 308   | 22555151 | 150 ohm (PRC)           |
| R309, 310   | 22555101 | 100 ohm                 |
| R311        | 22555339 | 3.3 ohm                 |
| R313, 314   | 22555822 | 8.2K ohm (PRC)          |
| R401, 402   | 22555332 | 3.3K ohm (PRC)          |
| R403, 404   | 22555683 | 68K ohm (PRC)           |
| R405, 406   | 22555152 | 1.5K ohm (PRC)          |
| R407, 408   | 22555472 | 4.7K ohm (PRC)          |
| R409, 410   | 22555473 | 47K ohm (PRC)           |
| R411, 412   | 22555152 | 1.5K ohm (PRC)          |
| R413, 414   | 22555153 | 15K ohm (PRC)           |
| R415, 416   | 22555333 | 33K ohm (PRC)           |
| R417, 418   | 22555274 | 270K ohm (PRC)          |
| R419, 420   | 22555151 | 150 ohm (PRC)           |
| R421, 422   | 22555103 | 10K ohm (PRC)           |
| R423, 424   | 22555394 | 390K ohm (PRC)          |
| R425, 426   | 22555472 | 4.7K ohm (PRC)          |
| R427, 428   | 22555102 | 1K ohm (PRC)            |
| R429, 430   | 22555222 | 2.2K ohm (PRC)          |
| R431        | 22555225 | 2.2M ohm                |
| R432        | 22555222 | 2.2K ohm (PRC)          |
| R501        | 22555220 | 22 ohm                  |
| R502        | 22555330 | 33 ohm                  |
| R503        | 22555182 | 1.8K ohm                |
| R504        | 22555183 | 18K ohm (PRC)           |
| R901        | 22545569 | 5.6 ohm                 |
| R902        | 22555221 | 220 ohm (PRC)           |
| R903        | 22545562 | 5.6K ohm                |
| ACCESSORIES |          |                         |
| ⚠ AC01      | 22176541 | Cord, Power Supply (TE) |
| ⚠ AC01      | 22176578 | Cord, Power Supply (TU) |
| AC02        | 22903010 | Owner's Manual (TE)     |
| AC02        | 22903011 | Owner's Manual (TU)     |

**TOSHIBA CORPORATION**  
2-1, GINZA 5-CHOME, CHUO-KU, TOKYO 104, JAPAN